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**In the claims:**

All of the claims standing for examination are reproduced below with appropriate status indication.

1-21. (Canceled)

22. (New) An integrated circuit (IC) for managing RF signals in a broadband array, comprising:

- a first interface for transmitting or receiving a plurality of different RF frequency bands in the broadband array;

- a second interface for receiving or transmitting signals at an intermediate frequency (IF);

- a first and a second circuit element enabled for up-conversion and down-conversion of RF signals from and to the intermediate frequency (IF), also enabled for sideband selection, and coupled to both the first and the second interface;

- a voltage-controlled local oscillator (LO) providing a specific output frequency coupled directly to the first circuit element and to the second circuit element through a frequency doubling device;

- wherein the first circuit element may convert to and from the intermediate frequency for a first unique bandwidth in the broadband spectrum through selecting the lower sideband of the LO frequency, may convert for a second unique bandwidth through selecting the upper sideband, and the second circuit element may convert for a third unique bandwidth selecting the lower sideband of the doubled LO frequency, and may convert for a fourth unique frequency through selecting the upper sideband, the one LO and two conversion elements then capable of conversion for four distinct and unique bandwidths in the broadband spectrum.

23. (New) An IC as in claim 22 further comprising a third and a fourth circuit element, each capable of sideband selection, the third coupled directly to the LO and the fourth

coupled to the LO through a second frequency-doubling device, wherein the first and the second circuit elements do lower sideband selection and the third and fourth do upper sideband selection, the four circuit element and one LO then doing conversion for four distinct and unique bandwidths in the broadband spectrum.

24. (New) The IC of claim 23 dedicated to down-conversion of the RF frequency bands.

25. (New) The IC of claim 23 dedicated to up-conversion of the RF frequency bands.

26. (New) The IC of claim 23 having circuit elements for both up-conversion and down-conversion.

27. (New) A broadband receiving/transmitting system, comprising:

- an antenna for receiving or transmitting RF signals in a broadband spectrum including a first number of distinct signal bands;

- an integrated circuit (IC) coupled to the first antenna, and therefore to the signal bands, through a first interface of the IC;

- modulation circuitry coupled to the IC through a second interface of the IC for receiving or transmitting signals in each of the bands at a common intermediate frequency (IF);

- wherein the conversion IC comprises a first, second, third and a fourth circuit element coupled to the first interface, for up-conversion or down-conversion of signals to and from an intermediate frequency (IF), the first and third set for lower sideband selection and the second and fourth set for upper sideband selection, and an on-chip voltage-controlled local oscillator (LO) coupled to the first and third circuit elements directly and to the second and fourth circuit elements through a voltage doubling device, such that the four circuit elements and one LO provide for conversion for four distinct signal bands in the broadband spectrum.

28. (New) The system of claim 27 dedicated to down-conversion of the RF frequency bands.
29. (New) The system of claim 27 dedicated to up-conversion of the RF frequency bands.
30. (New) The system of claim 27 having circuit elements providing both up-conversion and down-conversion.
31. (New) A method for enabling up and down conversion to an intermediate frequency for signals in four distinct signal bands in a broadband spectrum, comprising the steps of:
- (a) coupling a first, second, third and fourth conversion circuit elements, each capable of sideband selection, to an interface to the broadband spectrum;
  - (b) setting the first and third circuit elements for lower sideband selection and the second and fourth for upper sideband selection;
  - (b) coupling a voltage-controlled local oscillator (LO) to the first and the third conversion circuit elements directly and to the second and fourth through a frequency doubling circuit, providing thereby a different LO frequency to each conversion element, and enabling the four conversion elements and the one LO to provide up and down conversion for four distinct bands in the broadband spectrum.
32. (New) The method of claim 31 wherein only down conversion is accomplished.
33. (New) The method of claim 31 wherein only up conversion is accomplished.
34. (New) The method of claim 31 wherein both up conversion and down conversion are accomplished.